



## DIPLOMA WINTER 2008 EXAMINATION

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### BONDS & FIXED INTEREST MARKETS

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<b>DATE OF EXAM</b>	Thursday 4 December 2008
<b>3 HOURS</b>	10.00 am – 1.00 pm
<b>RUBRIC</b>	SECTION A - <i>ALL</i> questions in this section are to be answered SECTION B – <i>ALL</i> questions in this section are to be answered SECTION C – <i>TWO</i> questions in this section are to be answered

**Candidates are reminded that no marks will be awarded for illegible work**

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#### NOTES TO CANDIDATES

1. Please insert your Candidate Number on the cover of your Answer Book. *Do not insert your name.*
2. Show *all* workings in your Answer Book.
3. Candidates may attempt the sections in any order. Please indicate clearly in your Answer Book which questions you are answering.
4. Please insert in the box provided on the cover of your Answer Book the numbers of the questions you have attempted in the order in which they appear in the Answer Book.
5. You may use the calculator provided or one approved by the Securities & Investment Institute.
6. You must hand your Answer Book to an invigilator before you leave the Examination Hall. *Failure to do so will result in disqualification.*
7. The decision of the Securities & Investment Institute is final and no correspondence will be entered into concerning the grade awarded.
8. Once submitted, the examination scripts become the property of the Securities & Investment Institute and will not be returned to candidates.

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**PLEASE TURN OVER WHEN INSTRUCTED**

**SECTION A****TOTAL 45 MARKS****Answer ALL questions in this section**

- 1 a) Explain what is meant by the following economic terms:
- i) Recession
  - ii) Depression
  - iii) Stagflation *(3 marks)*
- b) Describe and explain how government bond yield curves may predict each of the above economic scenarios. *(6 marks)*
- 2 a) Show how PVBP (present value of a basis point) is related to the modified duration of a bond. *(1 mark)*
- b) Why are these measures very important for managing most types of bond portfolios? *(2 marks)*
- c) What is the PVBP for each of the two seasoned bonds described below for settlement on 31st December 2008? *(3 marks)*

<b>Bond</b>	<b>Coupon</b>	<b>Interest Pay Dates</b>	<b>Interest Basis</b>	<b>Redemption Date</b>	<b>Quoted Price</b>	<b>Quoted GRY *</b>	<b>Duration</b>
<b>A</b>	6.0%	31 March / 30 Sept	act / act	31 March 2025	104	5.620%	10.566
<b>B</b>	6.0%	30 June	30 / 360	30 June 2025	105	5.527%	10.761

\* quoted gross redemption yield per annum is on same basis as interest payment frequency

- 3 a) Describe the process for a term repo of a government bond.
- b) Describe the uses of both repos and reverse repos for participants in government bond markets.
- c) The UK Treasury 8% 2015 pays interest semi-annually on 7th June and 7th December and is priced at 120. Calculate the repurchase price of this stock for a 3-month term repo from 18th December 2008 assuming 3-month LIBOR is 5.50% and gilt repos trade 20 basis points inside LIBOR. *(6 marks)*

- 4 The table below gives prices for three fixed rate sterling bonds and a floating rate note together with 1 month LIBOR for four consecutive end-month dates. Calculate the gross return as a percentage for each of these securities for the period from 31st January to the end of April. You should assume that interest is received gross on the scheduled coupon dates and immediately reinvested.

Bond	Coupon per annum	Interest pay dates	Interest convention	31 Jan Price	28 Feb Price	31 Mar Price	30 Apr Price
a)	6.0%	31 March / 30 Sept	30 / 360	102	103	98	104
b)	6.0%	31 Dec	30 / 360	102	103	98	104
c)	6.0%	30 April / 31 Oct	act / 365	102	103	98	104
d)	Floating Rate LIBOR + 0.36%	End each month	act / act	100.5	100.7	100.4	100.7
	1 month LIBOR			5.0%	4.8%	4.9%	5.0%

- e) Briefly explain why the performances of bonds “a” and “c” differ by more than a few basis points. *(6 marks)*
- 5 You manage the fixed income portion of a large pension fund. You are advised on 15th December that the fixed income portfolio is to receive an extra £100m on 14th January next year. Describe three ways you could increase the fund’s exposure to fixed income prior to receipt of the cash. *(5 marks)*
- 6 Describe what is meant by the intrinsic value of:
- a call option
  - a convertible bond
  - a warrant
  - a put option
- (4 marks)*
- 7 a) Describe how currency forwards can be used to assist a sterling based fund invest in overseas bond markets.
- b) What are the major risks involved in such a strategy?
- c) The euro to sterling exchange rate is €1.285 to £1.00 for spot settlement. Relevant 3-month interbank rates are quoted in London at 5.10% for euro and 6.20% for sterling. Assuming today’s date is 4th December 2008, calculate the 3-month forward exchange rate for €£ assuming the interest rate parity theory applies. *(6 marks)*

8 Explain what is meant by the following terms:

a) Cumulative preference share

b) Non-cumulative preference share

c) Preferential creditor

*(3 marks)*

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Answer ALL questions in this section

9 The table below gives details of a number of bonds from different types of issuer denominated in the same currency and with a variety of maturities. It also shows their relevant reference government bonds together with the yield spread (sometimes called margin or yield margin) and six month yield spread histories against these reference bonds. All bonds are semi-annual paying securities and both the yields and modified durations shown reflect the semi-annual yield convention.

Bond	Issuer	Bond Type	Coupon	Maturity	Credit Rating	Price	Acc'd Int	GRY	Modified Duration	Spread in bps	Spread Average	Spread High	Spread Low	Ref. Stock
			%					%						
A1	Government	Gilt / Treasury	5.00	7/3/2018	AAA	104.21	1.160	4.44	7.33	n/a				
B	Major utility (electricity & water)	Unsecured	6.00	3/6/2018	A+	106.02	2.951	5.19	7.07	75	75	100	65	A1
C	International Pharmaceutical	Unsecured	5.50	27/11/2018	A+	100.61	0.046	5.42	7.62	98	100	110	85	A1
D	UK Property Group	Secured	5.25	28/11/2018	A-	97.42	0.029	5.59	7.65	115	105	123	98	A1
E	International Confectionary	Unsecured	6.25	12/6/2018	BBB+	100.35	2.920	6.2	6.91	176	170	210	150	A1
F	Supranational (e.g. EIB)	Unsecured	6.00	15/4/2018	AAA	110.00	0.758	4.67	7.20	23	21	29	14	A1
A2	Government	Gilt / Treasury	4.75	7/3/2020	AAA	100.78	1.102	4.66	8.57	n/a				
G	Multinational Bank	Senior	9.00	22/6/2020	AA-	128.74	3.959	5.59	7.50	93	90	100	80	A2
H	Multinational Bank	Subordinated	6.50	29/12/2021	A-	98.18	2.735	6.71	8.44	205	200	235	175	A2
I	International Advertising Agency	Unsecured	7.00	31/5/2021	BBB	104.15	0.000	6.51	8.35	185	175	210	165	A2
J	Newspaper / Media Co	Unsecured	6.125	29/11/2022	BBB	95.18	0.017	6.66	9.16	200	195	205	175	A2
K	International Pharmaceutical	Unsecured	9.00	30/9/2021	A+	128.88	1.517	5.78	8.15	112	102	118	95	A2
L	UK utility (electricity & water)	Unsecured	5.00	14/5/2022	A-	94.74	0.221	5.56	9.55	90	80	105	68	A2
M	Multinational Insurance Co	Subordinated	7.50	21/6/2022	A-	106.96	3.320	6.71	8.36	205	170	220	160	A2
N	Tobacco (non US)	Unsecured	5.875	4/12/2022	BBB	95.37	2.873	6.38	9.05	172	164	198	155	A2
O	Food Retailer	Unsecured	5.75	17/12/2022	BBB+	95.73	2.608	6.21	9.18	155	145	185	135	A2

- a) Bond H and Bond L have the same credit rating. Suggest three reasons why there is a difference of 115 basis points between their redemption yields. *(3 marks)*
- b) Your broker suggests switching Bond N into Bond M as he believes you will get a better price performance as well as extra yield. Explain in what circumstances and why you would follow or ignore your broker's advice. *(3 marks)*
- c) Explain why a switch from Bond G into Bond H may be sensible for an income fund but not necessarily so for a performance fund. *(3 marks)*
- d) Explain whether a switch from Bond C into Bond K would be sensible for both income and performance funds if you expect yields to fall. *(3 marks)*
- e) If you expect yields to remain unchanged, would your answers to d) differ? Briefly explain why. *(1 mark)*
- f) You have a modified duration target of 8.3. By considering the eight highest yielding bonds select a portfolio which aims to maximise redemption yield. The portfolio should have a minimum of five holdings with no single holding accounting for more than 25% by value. What is the redemption yield of this portfolio? *(7 marks)*
- g) Assuming the global economy is expected to enter a period of recession, recommend two substitutions to your chosen portfolio from f) so that it continues to be a high yield fund with a modified duration target of 8.3. (No calculations necessary for this part g)). *(2 marks)*
- h) You wish to take a short term trading view that involves shortening your portfolio's modified duration by one year. If interbank rates are 4%, determine a portfolio which still aims to provide a high redemption yield and has no holding accounting for more than 25% by value. *(3 marks)*

**Answer TWO of the FOUR questions in this section. Each question carries 15 marks.**

- 10 Over the last few years bond investors ceased to demand effective levels of covenant protection for new unsecured corporate bond issues from investment grade borrowers.
- a) Discuss how this situation arose and indicate what types of covenants came to be accepted as minimum standards for such issues. *(7 marks)*
  - b) Discuss why these minimum standards are insufficient and explain what covenants should be included in new unsecured corporate bond issues from investment grade issuers. *(8 marks)*
- 11 A single currency long-only fixed rate bond fund underperformed its benchmark over the last year by a substantial amount. This poor performance was unexpected according to the fund manager's risk management systems. The fund's benchmark is at least 50% in AAA rated governments and supranationals and with the balance in investment grade bonds issued by the corporate and financial sectors.
- a) Suggest asset allocation and stock selection decisions which could have led to this underperformance and discuss how the risk management system could have failed to protect the performance of the fund. *(10 marks)*
  - b) Suggest risk management frameworks which may be more appropriate for the future and explain why they should provide better protection. *(5 marks)*
- 12 The Eurozone, the United States and the United Kingdom have reduced interest rates, recapitalized major parts of their banking systems and guaranteed deposits in broadly similar although not identical ways.
- a) Outline why this was necessary and show how failure to have done so could have led to major dislocation in their local as well as global markets. *(5 marks)*
  - b) For each of the economic areas above (only include Germany, France, Spain and Italy for the Eurozone) outline the approaches taken by sovereign governments to address the recessionary influences now prevalent and discuss how these approaches are likely to affect interest rates, yields, exchange rates and other major economic indicators. *(10 marks)*

- 13 A large trust provides that one third of its income is payable to each of three people: the widow, aged 73, of the settlor of the trust, a brother aged 82 and a sister aged 78. In the event of the death of any of these life tenants, their income entitlement can remain in the trust or be paid to the sole residuary beneficiary, the settlor's son. The trust will be wound up on the death of the last surviving life tenant and its assets paid to the residuary beneficiary.

The trust has been invested 50% in gilts and 50% in equities with an emphasis on bank stocks. Due to the reduction or, in some cases, the disappearance of dividends from bank shares, the trust is experiencing a major reduction in income which must be restored to previous levels. This will be done by increasing the amount invested in gilt and fixed income markets. Outline how you would advise the trustees to restructure this fund to meet this aim and ensure that the capital of the trust is still has scope to increase its value when it is wound up. *(15 marks)*